

BioMap and Living Waters

Guiding Land Conservation for Biodiversity in Massachusetts

Core Habitats of Sturbridge

This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is not intended for use in state regulations.

Produced by:
Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries and Wildlife
Executive Office of Environmental Affairs
Commonwealth of Massachusetts

Produced in 2004



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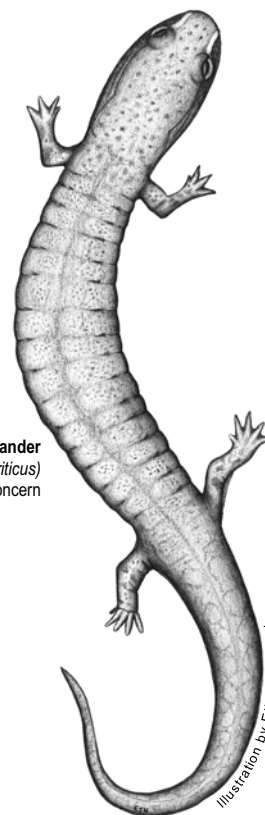
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Living Waters: Core Habitat Summaries

* Depending on the location of Core Habitats, your city or town may not have all of these sections.

Spring Salamander
(*Gyrinophilus porphyriticus*)
Species of Special Concern



Funding for this project was made available by the Executive Office of Environmental Affairs, contributions to the Natural Heritage & Endangered Species Fund, and through the State Wildlife Grants Program of the US Fish & Wildlife Service.



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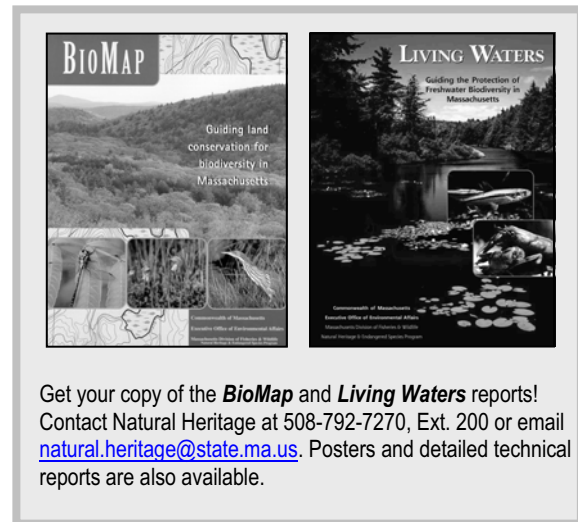
Introduction

In this report, the Natural Heritage & Endangered Species Program provides you with site-specific biodiversity information for your area. Protecting our biodiversity today will help ensure the full variety of species and natural communities that comprise our native flora and fauna will persist for generations to come.

The information in this report is the result of two statewide biodiversity conservation planning projects, **BioMap** and **Living Waters**. The goal of the BioMap project, completed in 2001, was to identify and delineate the most important areas for the long-term viability of terrestrial, wetland, and estuarine elements of biodiversity in Massachusetts. The goal of the Living Waters project, completed in 2003, was to identify and delineate the rivers, streams, lakes, and ponds that are important for freshwater biodiversity in the Commonwealth. These two conservation plans are based on documented observations of rare species, natural communities, and exemplary habitats.

What is a Core Habitat?

Both BioMap and Living Waters delineate **Core Habitats** that identify the most critical sites for biodiversity conservation across the state. Core Habitats represent habitat for the state's most viable rare plant and animal populations and include exemplary natural communities and aquatic habitats. Core Habitats represent a wide diversity of rare species and natural communities (see Table 1), and these areas are also thought to contain virtually all of the other described species in Massachusetts. Statewide, BioMap Core Habitats encompass 1,380,000 acres of uplands and wetlands, and Living Waters identifies 429 Core Habitats in rivers, streams, lakes, and ponds.



Core Habitats and Land Conservation

One of the most effective ways to protect biodiversity for future generations is to protect Core Habitats from adverse human impacts through land conservation. For Living Waters Core Habitats, protection efforts should focus on the **riparian areas**, the areas of land adjacent to water bodies. A naturally vegetated buffer that extends 330 feet (100 meters) from the water's edge helps to maintain cooler water temperature and to maintain the nutrients, energy, and natural flow of water needed by freshwater species.

In Support of Core Habitats

To further ensure the protection of Core Habitats and Massachusetts' biodiversity in the long-term, the BioMap and Living Waters projects identify two additional areas that help support Core Habitats.

In BioMap, areas shown as **Supporting Natural Landscape** provide buffers around the Core Habitats, connectivity between Core Habitats, sufficient space for ecosystems to function, and contiguous undeveloped habitat for common species. Supporting Natural Landscape was



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generated using a Geographic Information Systems (GIS) model, and its exact boundaries are less important than the general areas that it identifies. Supporting Natural Landscape represents potential land protection priorities once Core Habitat protection has been addressed.

In Living Waters, *Critical Supporting Watersheds* highlight the immediate portion of the watershed that sustains, or possibly degrades, each freshwater Core Habitat. These areas were also identified using a GIS model. Critical Supporting Watersheds represent developed and undeveloped lands, and can be quite large. Critical Supporting Watersheds can be helpful in land-use planning, and while they are not shown on these maps, they can be viewed in the Living Waters report or downloaded from www.mass.gov/mgis.

Understanding Core Habitat Species, Community, and Habitat Lists

What's in the List?

Included in this report is a list of the species, natural communities, and/or aquatic habitats for each Core Habitat in your city or town. The lists are organized by Core Habitat number.

For the larger Core Habitats that span more than one town, the species and community lists refer to the entire Core Habitat, not just the portion that falls within your city or town. For a list of all the state-listed rare species within your city or town's boundary, whether or not they are in Core Habitat, please see the town rare species lists available at www.nhesp.org.

The list of species and communities within a Core Habitat contains only the species and

Table 1. The number of rare species and types of natural communities explicitly included in the BioMap and Living Waters conservation plans, relative to the total number of native species statewide.

BioMap		
Biodiversity Group	Species and Verified Natural Community Types	
	Included in BioMap	Total Statewide
Vascular Plants	246	1,538
Birds	21	221 breeding species
Reptiles	11	25
Amphibians	6	21
Mammals	4	85
Moths and Butterflies	52	An estimated 2,500 to 3,000
Damselflies and Dragonflies	25	An estimated 165
Beetles	10	An estimated 2,500 to 4,000
Natural Communities	92	> 105 community types
Living Waters		
Biodiversity Group	Species	
	Included in Living Waters	Total Statewide
Aquatic Vascular Plants	23	114
Fishes	11	57
Mussels	7	12
Aquatic Invertebrates	23	An estimated > 2500

natural communities that were explicitly included in a given BioMap or Living Waters Core Habitat. Other rare species or examples of other natural communities may fall within the Core Habitat, but for various reasons are not included in the list. For instance, there are a few rare species that are omitted from the list or summary because of their particular sensitivity to the threat of collection. Likewise, the content of many very small Core Habitats are not described in this report or list, often because they contain a single location of a rare plant



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species. Some Core Habitats were created for suites of common species, such as forest birds, which are particularly threatened by habitat fragmentation. In these cases, the individual common species are not listed.

What does 'Status' mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act, M.G.L. c.131A, and its implementing regulations, 321 CMR 10.00. Rare species are categorized as Endangered, Threatened, or of Special Concern according to the following:

- **Endangered** species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- **Threatened** species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- **Special Concern** species have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition, the Natural Heritage & Endangered Species Program maintains an unofficial **watch list** of plants that are tracked due to potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated any laws or regulations, but they can help to identify ecologically important areas that are worthy of protection. The status of natural

Legal Protection of Biodiversity

BioMap and Living Waters present a powerful vision of what Massachusetts would look like with full protection of the land that supports most of our biodiversity. To create this vision, some populations of state-listed rare species were deemed more likely to survive over the long-term than others.

Regardless of their potential viability, all sites of state-listed species have full legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.37 and 10.59). The **Massachusetts Natural Heritage Atlas** shows **Priority Habitats**, which are used for regulation under the Massachusetts Endangered Species Act and Massachusetts Environmental Policy Act (M.G.L. c.30) and **Estimated Habitats**, which are used for regulation of rare wildlife habitat under the Wetlands Protection Act. For more information on rare species regulations, see the *Massachusetts Natural Heritage Atlas*, available from the Natural Heritage & Endangered Species Program in book and CD formats.

BioMap and Living Waters are conservation planning tools and do not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the combined BioMap and Living Waters vision is fully realized, we must continue to protect all populations of our state-listed species and their habitats through environmental regulation.

communities reflects the documented number and acreages of each community type in the state:

- **Critically Imperiled** communities typically have 5 or fewer documented sites or have very few remaining acres in the state.
- **Imperiled** communities typically have 6-20 sites or few remaining acres in the state.
- **Vulnerable** communities typically have 21-100 sites or limited acreage across the state.
- **Secure** communities typically have over 100 sites or abundant acreage across the state; however excellent examples are identified as Core Habitat to ensure continued protection.



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Understanding Core Habitat Summaries

Following the BioMap and Living Waters Core Habitat species and community lists, there is a descriptive summary of each Core Habitat that occurs in your city or town. This summary highlights some of the outstanding characteristics of each Core Habitat, and will help you learn more about your city or town's biodiversity. You can find out more information about many of these species and natural communities by looking at specific *fact sheets* at www.nhesp.org.

Next Steps

BioMap and Living Waters were created in part to help cities and towns prioritize their land protection efforts. While there are many reasons to conserve land – drinking water protection, recreation, agriculture, aesthetics, and others – BioMap and Living Waters Core Habitats are especially helpful to municipalities seeking to protect the rare species, natural communities, and overall biodiversity within their boundaries. Please use this report and map along with the rare species and community fact sheets to appreciate and understand the biological treasures in your city or town.

Protecting Larger Core Habitats

Core Habitats vary considerably in size. For example, the average BioMap Core Habitat is 800 acres, but Core Habitats can range from less than 10 acres to greater than 100,000 acres. These larger areas reflect the amount of land needed by some animal species for breeding, feeding, nesting, overwintering, and long-term survival. Protecting areas of this size can be

very challenging, and requires developing partnerships with neighboring towns.

Prioritizing the protection of certain areas within larger Core Habitats can be accomplished through further consultation with Natural Heritage Program biologists, and through additional field research to identify the most important areas of the Core Habitat.

Additional Information

If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program:

by Phone 508-792-7270, Ext. 200

by Fax: 508-792-7821

by Email: natural.heritage@state.ma.us.

by Mail: North Drive
Westborough, MA 01581

The GIS datalayers of BioMap and Living Waters Core Habitats are available for download from MassGIS: www.mass.gov/mgis

Check out www.nhesp.org for information on:

- Rare species in your town
- Rare species fact sheets
- BioMap and Living Waters projects
- Natural Heritage publications, including:
 - * Field guides
 - * Natural Heritage Atlas, and more!



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BioMap: Species and Natural Communities

Sturbridge

Core Habitat BM915

Natural Communities

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Circumneutral Rock Cliff Community		Vulnerable
Circumneutral Talus Forest/Woodland		Vulnerable
Inland Atlantic White Cedar Swamp		Imperiled
Shallow Emergent Marsh		Secure

Plants

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Bristly Buttercup	<i>Ranunculus pensylvanicus</i>	Threatened
Climbing Fumitory	<i>Adlumia fungosa</i>	Threatened
Drooping Speargrass	<i>Poa languida</i>	Endangered

Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Blue-spotted Salamander	<i>Ambystoma laterale</i>	Special Concern
Four-toed Salamander	<i>Hemidactylium scutatum</i>	Special Concern
Marbled Salamander	<i>Ambystoma opacum</i>	Threatened
Sensitive Rare Vertebrate		
Spotted Turtle	<i>Clemmys guttata</i>	Special Concern
Wood Turtle	<i>Clemmys insculpta</i>	Special Concern

Core Habitat BM955

Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Blue-spotted Salamander	<i>Ambystoma laterale</i>	Special Concern



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BioMap: Species and Natural Communities

Sturbridge

Core Habitat BM963

Natural Communities

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Hemlock-Hardwood Swamp		Secure
Mud Flat		Secure
Oak - Hemlock - White Pine Forest		Secure
Shallow Emergent Marsh		Secure

Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Four-toed Salamander	<i>Hemidactylium scutatum</i>	Special Concern
Marbled Salamander	<i>Ambystoma opacum</i>	Threatened

Core Habitat BM1002

Plants

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Small Site for Rare Plant		

Core Habitat BM1010

Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Water Shrew	<i>Sorex palustris</i>	Special Concern

Core Habitat BM1127

Natural Communities

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Northern Hardwoods - Hemlock - White Pine Forest		Secure
Shrub Swamp		Secure



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BioMap: Species and Natural Communities

Sturbridge

Core Habitat BM1128

Natural Communities

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Northern Hardwoods - Hemlock - White Pine Forest		Secure

Core Habitat BM1130

Natural Communities

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Northern Hardwoods - Hemlock - White Pine Forest		Secure

Core Habitat BM1131

Natural Communities

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Northern Hardwoods - Hemlock - White Pine Forest		Secure



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BioMap: Core Habitat Summaries

Sturbridge

Core Habitat BM915

This large and long Core Habitat includes a diversity of connected habitats that are used by rare species of reptiles, amphibians, and plants. It extends from East Brookfield south to the Connecticut border at Breakneck Brook, and encompasses numerous wetlands, brooks, rivers, riparian habitats, and forested ridges. Highlights of the Core Habitat include the state's easternmost population of Endangered Drooping Speargrass, several circumneutral rocky communities, and extensive habitats for rare animals from Wood Turtles to Marbled Salamanders. Parts of this Core Habitat are protected within Wells State Park and the Breakneck Brook Wildlife Management Area.

Natural Communities

This Core Habitat contains a number of circumneutral rocky communities including three small Circumneutral Talus Forests of moderate quality. Circumneutral Talus Forest communities develop on boulder strewn slopes below certain cliffs, with scattered trees, shrubs, vines, and ferns. There is often a gradient of vegetation density as the slope changes, with more trees on the lower slope.

Plants

The easternmost of only four Massachusetts populations of the Endangered Drooping Speargrass is growing here within a circumneutral woodland. In a marshy area, the Threatened Bristly Buttercup makes its home. Two populations of the Threatened Climbing Fumitory, a biennial vine that clammers over rocks, are found here as well.

Vertebrates

This long Core Habitat includes headwater wetlands and tributaries, riparian areas along streams and rivers, forested ridges, and valley wetlands that together provide large, connected habitats for several species of state-protected rare amphibians and reptiles. These diverse habitats contain significant habitat for Wood and Spotted Turtles, as well as Marbled, Four-toed, and Blue-spotted Salamanders. Rare wetland birds may use wetlands associated with the Quinebaug River and emergent wetlands and meadows along Great Brook in East Brookfield.

Core Habitat BM955

Vertebrates

This Core Habitat encompasses hilly deciduous forest and a good interspersed of forested wetlands, small streams, and vernal pools that provide significant habitat for Blue-spotted Salamanders. It includes wetlands and first-order brooks that are the headwaters of Cranberry River in Spencer and Great Brook in East Brookfield. Four-toed Salamanders may be present here as well, especially in Sphagnum-dominated habitats along small streams and in forested wetlands.



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BioMap: Core Habitat Summaries

Sturbridge

Core Habitat BM963

This Core Habitat encompasses the areas around Wolf Swamp, Cranberry Pond, and over two miles of Trout Brook and its tributaries in Brookfield. A diversity of high-quality natural communities provide habitat for plants and animals, including rare salamanders. Over half the area is already protected as conservation land.

Natural Communities

This Core Habitat contains a large and diverse Hemlock-Hardwood Swamp. Hemlock-Hardwood Swamps are acidic forested swamps that have Hemlock as the dominant canopy species. These forested wetlands occur on saturated soils in poorly drained basins throughout the central and western portions of the state. Here the swamp is embedded within an extensive, maturing Oak-Hemlock-White Pine Forest, which itself has excellent habitat diversity, including drainages, small ravines, and vernal pools.

Vertebrates

This area includes red maple swamps and other riparian wetlands interspersed with wooded ridges. The Core Habitat contains significant, connected habitat for Four-toed Salamanders, especially in Wolf Swamp and in small forested wetlands along Trout Brook. Marbled Salamanders, which have been documented in the area, may occur here as well, especially where vernal pools are present in rocky, deciduous, forested uplands.

Core Habitat BM1010

Vertebrates

This Core Habitat is used by a population of Water Shrews living in the floodplain of East Brimfield Lake and in the riparian wetlands along a mile of tributary brook extending to the southwest. It also provides Wood Turtle habitat in streams and associated riparian and upland habitats.

Core Habitat BM1127

Natural Communities

This Core Habitat contains one of the best Shrub Swamps in the state. Shrub Swamp communities are a common and variable type of wetland occurring on seasonally or temporarily flooded soils. They are often found in the transition zone between emergent marshes and swamp forests. Here the Shrub Swamp is very large and embedded within a large area of unfragmented natural landscape. There is also a small, yet mature Northern Hardwoods-Hemlock-White Pine forest well-buffered by a large wetland. Northern Hardwoods-Hemlock-White Pine Forests have a mix of evergreen and deciduous trees, with a closed, full canopy, and sparse shrub and herbaceous layers. They commonly occur on north facing slopes and ravines with moderately acidic soils.



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BioMap: Core Habitat Summaries

Sturbridge

Core Habitat BM1128

Natural Communities

This Core Habitat contains a small, yet mature Northern Hardwoods-Hemlock-White Pine forest well-buffered by a large wetland. Northern Hardwoods-Hemlock-White Pine Forests have a mix of evergreen and deciduous trees, with a closed, full canopy, and sparse shrub and herbaceous layers. They commonly occur on north facing slopes and ravines with moderately acidic soils.

Core Habitat BM1130

Natural Communities

This Core Habitat contains a small, yet mature Northern Hardwoods-Hemlock-White Pine forest well-buffered by a large wetland. Northern Hardwoods-Hemlock-White Pine Forests have a mix of evergreen and deciduous trees, with a closed, full canopy, and sparse shrub and herbaceous layers. They commonly occur on north facing slopes and ravines with moderately acidic soils.

Core Habitat BM1131

Natural Communities

This Core Habitat contains a small, yet mature Northern Hardwoods-Hemlock-White Pine forest well-buffered by a large wetland. Northern Hardwoods-Hemlock-White Pine Forests have a mix of evergreen and deciduous trees, with a closed, full canopy, and sparse shrub and herbaceous layers. They commonly occur on north facing slopes and ravines with moderately acidic soils.



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Living Waters: Species and Habitats

Sturbridge

Core Habitat LW131

Fishes

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Bridle Shiner	<i>Notropis bifrenatus</i>	Special Concern

Core Habitat LW204

Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Creeper	<i>Strophitus undulatus</i>	Special Concern
Triangle Floater	<i>Alasmidonta undulata</i>	Special Concern

Core Habitat LW207

Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Creeper	<i>Strophitus undulatus</i>	Special Concern
Triangle Floater	<i>Alasmidonta undulata</i>	Special Concern

Core Habitat LW209

Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Triangle Floater	<i>Alasmidonta undulata</i>	Special Concern



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Living Waters: Core Habitat Summaries

Sturbridge

Core Habitat LW131

Long Pond supports one of four known populations of Bridle Shiner in the Quinebaug Watershed. This fish Species of Special Concern has a small range from southern New England to South Carolina, and has been declining or extirpated in much of the region. The Bridle Shiner is typically found in well-vegetated, quiet waters. It feeds on small aquatic insects and other invertebrates, and is an important part of the freshwater ecosystem as prey for larger fishes.

Core Habitat LW204

The Quinebaug River supports four freshwater mussel species, including robust populations of the rare Triangle Floater and the rare Creeper mussel. These populations are important because younger and older mussels of each species were found during surveys, indicating that these populations are reproducing. Mussels are typically found in the slower stretches of the river, where they can anchor in the softer sands and gravels, but they are also found in the sands and gravels that settle between rocks in the river's swiftly flowing sections.

Core Habitat LW207

The Quinebaug River supports four freshwater mussel species, including robust populations of the rare Triangle Floater and the rare Creeper mussel. These populations are important because younger and older mussels of each species were found during surveys, indicating that these populations are likely reproducing. Mussels are typically found in the slower stretches of the river, where they can anchor in the softer sands and gravels, but they are also found in the sands and gravels that settle between rocks in the river's swiftly flowing sections.

Core Habitat LW209

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Please contribute on your Massachusetts income tax form or directly to the



Natural Heritage &
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To learn more about the Natural Heritage & Endangered Species Program and the Commonwealth's rare species, visit our web site at: www.nhesp.org.